Nyanza Chemical Waste Dump Site
Sudbury River (OU4)

Priority Panel Discussion
Fiscal Year 2012

October 2011

Nyanza Operable Units (OUs)

Nyanza consists of four (4) OUs:

- OU1 - On-site soil remediation/capping **(complete)**
- OU2 - Groundwater contamination/Indoor Air
  (will be complete in FY2012)
- OU3 - Eastern Wetlands/Trolley Brook (**complete**)

- **OU4 – Sudbury River Remedy**

The Sudbury River

- Over 100,000 pound of mercury were discharged between 1917 and 1978.
- 26 river-miles downstream from Nyanza are contaminated (to varying degrees).
- Mercury the only site–related contaminant triggering a risk of adverse health effects.


Sudbury River Watershed
Inset Scale in Miles
REACH 10
REACH 9
REACH 8
REACH 7
REACH 6
REACH 5
REACH 4
REACH 3
REACH 2
REACH 1
SECONDARY AREAS
PRIMARY AREA
NYANZA SUPERFUND SITE
CONCORD
SUDBURY
MARLBOROUGH
WAYLAND
FRAMINGHAM
NATICK
ASHLAND
SHERBORN
HOPKINTON
SOUTHBOROUGH
NORTHBOROUGH
WESTBOROUGH
MIDDLESEX CO
WORCHESTER CO
Concord River
Assabet River
Sudbury River
Walden Pond
Fairhaven Bay
Farrar Pond
Willis Lake
Carding Mill Pond
Hager Pond
Sudbury Reservoir
Hop Brook
Heard Pond
Dudley Pond
Saxonville Pond
Lake Cochituate
Res #3
Res #1
Res #2
Mill Pond
Indian Br
Hopkinton Reservoir
Ashland Reservoir
Cedar Swamp Pond
Whitehall Reservoir
Westborough Reservoir
Hemenway Pond
Charles River
LEGEND:
Township Boundary
County Boundary
Watershed Boundary
Sudbury River Watershed
Hydrography
Target Areas
Primary
Secondary
River Reaches
Scale in Feet
Scale in Miles
Nyanza Superfund Site OU IV
Sudbury River Mercury Contamination
REACHES AND SUDBURY RIVER TARGET AREAS

Risk Reduction

- Highest concentration of mercury is locate in Framingham - behind the Framingham Reservoir No. 2 dam (44 ppm)
- Risks from ingestion of contaminated fish are greatest closer to Nyanza (i.e., in Framingham).
- Risk assumes approximately 12 fish meal per year are obtained from the Sudbury River

Environmental Justice

- Framingham is large urban center (pop. 65,000 - plus estimated 20,000 undocumented immigrants)
- Environmental Justice areas (minority and low income) in close proximity – see Map
- Many local fisherman interviewed catch and consume Sudbury River fish despite warning signs and advisories

Environmental Justice

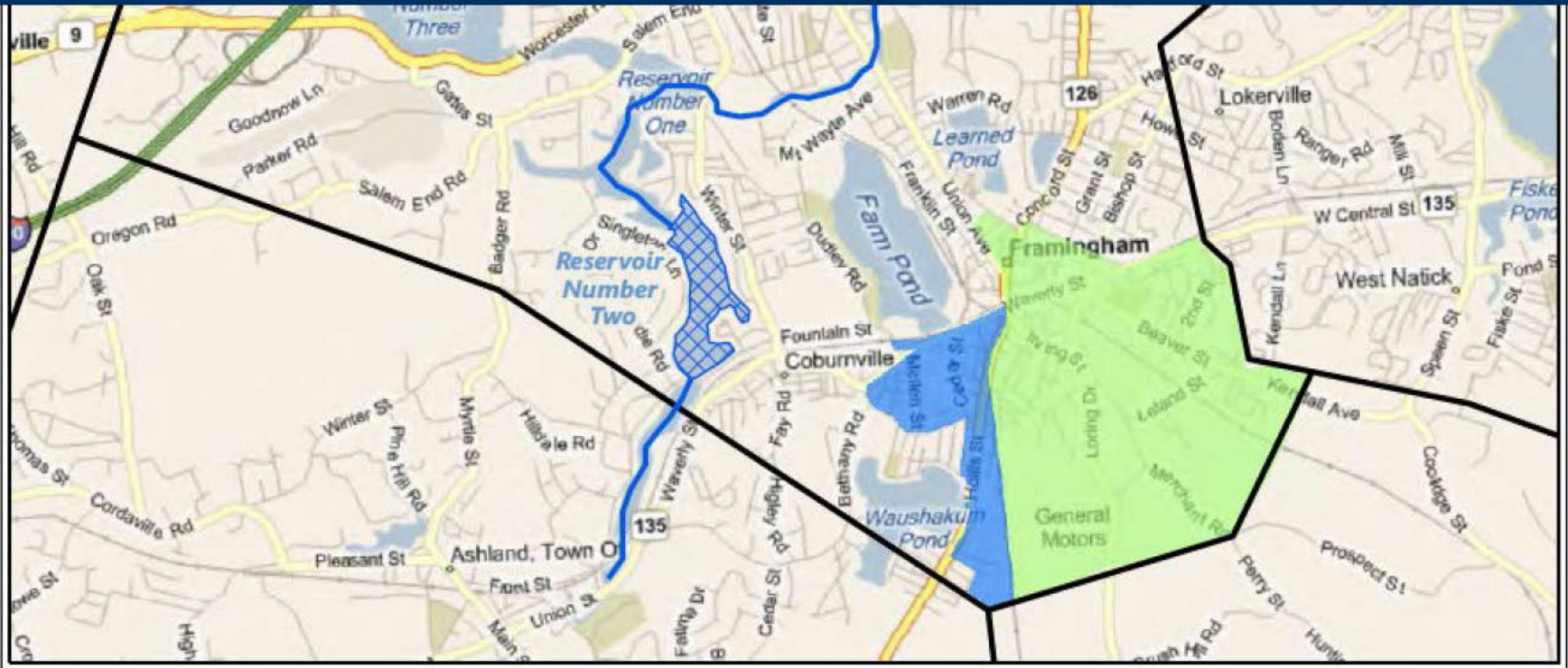


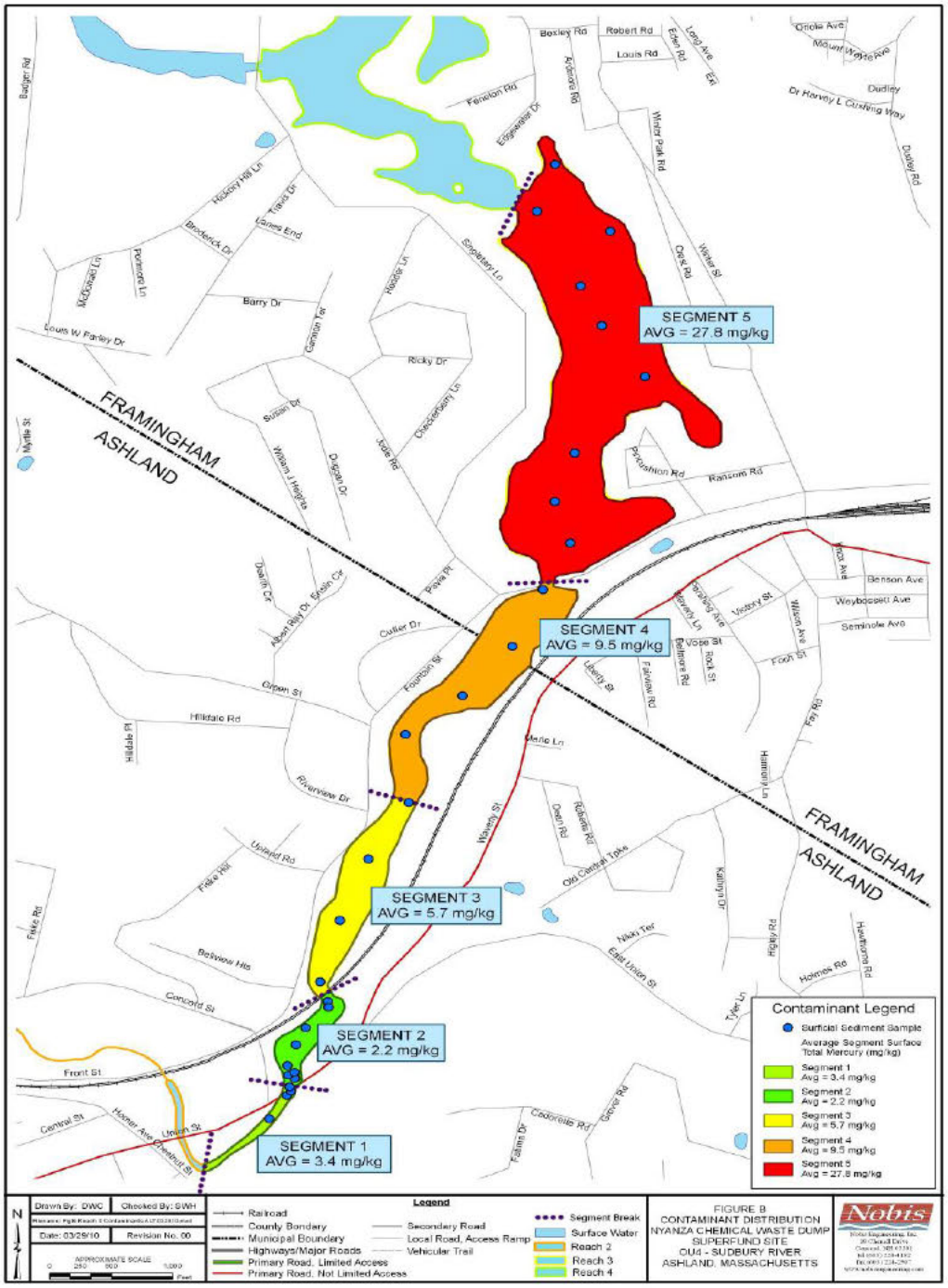
Figure 3 - Environmental Justice Areas along the Sudbury River

The Remedy (2010 ROD)

- Combination Remedy
  - Institutional Controls (site wide) such as advisories and signage
  - Periodic monitoring of fish, surface water and sediment
  - Enhanced Natural Recovery (i.e., thin-layer sand capping) for a portion of the river where most of the mercury historically settled and where risk from consumption is greatest.

Thin-layer sand capping

- A 6-inch layer of sand placed on the sediment surface
- Reduction of mercury available for methylation and uptake into food web
- Accelerates the natural process of sedimentation
- Targets mercury “hot spots with mercury greater than 10 ppm
- Computer Model predicted recovery times substanilly faster (70 years to 10 years) if TLC applied


SEGMENT 5
AVG = 27.8 mg/kg
SEGMENT 4
AVG = 9.5 mg/kg
SEGMENT 3
AVG = 5.7 mg/kg
SEGMENT 2
AVG = 2.2 mg/kg
SEGMENT 1
AVG = 3.4 mg/kg
FRAMINGHAM
ASHLAND
Contaminant Legend
Surficial Sediment Sample
Average Segment Surface Total Mercury (mg/kg)
Segment 1 Avg = 3.4 mg/kg
Segment 2 Avg = 2.2 mg/kg
Segment 3 Avg = 5.7 mg/kg
Segment 4 Avg = 9.5 mg/kg
Segment 5 Avg = 27.8 mg/kg
Legend
Railroad
County Boundary
Municipal Boundary
Highways/Major Roads
Primary Road, Limited Access
Primary Road, Not Limited Access
Secondary Road
Local Road, Access Ramp
Vehicular Trail
Segment Break
Surface Water
Reach 2
Reach 3
Reach 4
FIGURE B
CONTAMINANT DISTRIBUTION
NYANZA CHEMICAL WASTE DUMP
SUPERFUND SITE
OU4 - SUDBURY RIVER
ASHLAND, MASSACHUSETTS
Nobis

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APPROXIMATE SCALE

Legend

- Railroad
- County Bondary
- Municipal Boundary
- Highways/Major Roads
- Secondary Road
- Local Road, Access Ramp
- Vehicular Trail
- Segment Break
- Surface Water
- Reach 2
- Reach 3

FIGURE C-1
POTENTIAL STAGING AREA DETAIL
REACH 3 SEGMENTS
NYANZA CHEMICAL WASTE DUMP
SUPERFUND SITE
OU4 - SUDBURY RIVER

Nobis Engineering, Inc.
18 Chenell Drive
Concord, NH 03301
tel (603) 224-4182

Remedial Design

- Pre-Design Investigations Complete
  - Bathymetry
  - Aquatic vegetation survey
  - Baseline sampling of fish and mussels
- Work Plan for Remedy Construction being prepared by the Army Corps of Engineers
  - Draft Work Plan anticipated Spring 2012
  - Final Design anticipated Fall 2012

Remedy Construction

- Estimated 2 years for construction - including restoration
- Estimated costs (from FS) $8.5 Million
- Will employ barges and conveyors systems to minimize local impacts
- When complete will result in Construction Complete for this site

Question or Comments

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